

selecting the animal with the highest quantity of cells expressing an antigen that is targeted by MHC-DQ antibodies as MHC-DQD, thereby selecting for robustness among two or more animals.

Claim 7 (Original): A method for selecting for robustness among two or more animals, the method comprising the steps of:

providing two or more animals of the same species;

determining in each animal the proliferation frequency of CD4 antigen-expressing cells; and

selecting the animal with the lowest proliferation frequency of CD4 antigen-expressing cells,

thereby selecting for robustness among two or more animals.

Claim 8 (Original): The method of claim 1, wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta canadensis*.

Claim 9 (Original): The method of claim 2, wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta canadensis*.

Claim 10 (Original): The method of claim 3, wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta canadensis*.

Claim 11 (Original): The method of claim 4, wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta canadensis*.

Claim 12 (Original): The method of claim 5, wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta canadensis*.

Claim 13 (Original): The method of claim 6, wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta canadensis*.

Claim 14 (Original): The method of claim 7, wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta canadensis*.

Claim 15 (Original): A method for selecting for robustness among two or more animals, the method comprising the steps of:

providing two or more animals of the same species;

determining in each animal the quantities of CD16 antigen-expressing cells, CD16 and CD2

double-positive antigen-expressing cells, CD8 antigen-expressing cells, MHC-DQ

antigen-expressing cells, cells expressing an antigen that is targeted by MHC-DQ

antibodies as MHC-DQB, and cells expressing an antigen that is targeted by MHC-DQ antibodies as MHC-DQD;
determining in each animal the proliferation frequency of CD4 antigen-expressing cells; and selecting the animal with the lowest quantity of CD16 antigen-expressing cells, the lowest quantity of CD16 and CD2 double-positive antigen-expressing cells, the lowest quantity of CD8 antigen-expressing cells, the highest quantity of MHC-DQ antigen-expressing cells, the highest quantity of cells expressing an antigen targeted by MHC-DQ antibodies as MHC-DQB, the highest quantity of cells expressing an antigen targeted by MHC-DQ antibodies as MHC-DQD, and the lowest proliferation frequency of CD4 antigen-expressing cells, thereby selecting for robustness among two or more animals.

Claim 16 (Original): The method of claim 15, wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babulus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta canadensis*.

Claim 17 (Original): A method for selecting for robustness among two or more animals, the method comprising the steps of:
providing two or more animals of the same species;
determining in each animal the quantity of CD16 antigen-expressing cells;
determining a statistically significant association between an animal's quantity of CD16 antigen-expressing cells and robustness; and
selecting for the animal in order to improve robustness based on the association.

Claim 18 (Original): A method for selecting for robustness among two or more animals, the method comprising the steps of:

- providing two or more animals of the same species;
- determining in each animal the quantity of CD16 and CD2 double-positive antigen-expressing cells;
- determining a statistically significant association between an animal's quantity of CD16 and CD2 double-positive antigen-expressing cells and robustness; and
- selecting for the animal in order to improve robustness based on the association.

Claim 19 (Original): A method for selecting for robustness among two or more animals, the method comprising the steps of:

- providing two or more animals of the same species;
- determining in each animal the quantity of CD8 antigen-expressing cells;
- determining a statistically significant association between an animal's quantity of CD8 antigen-expressing cells and robustness; and
- selecting for the animal in order to improve robustness based on the association.

Claim 20 (Original): A method for selecting for robustness among two or more animals, the method comprising the steps of:

- providing two or more animals of the same species;
- determining in each animal the quantity of MHC-DQ antigen-expressing cells;
- determining a statistically significant association between an animal's quantity of MHC-DQ antigen-expressing cells and robustness; and

selecting for the animal in order to improve robustness based on the association.

Claim 21 (Original): A method for selecting for robustness among two or more animals, the method comprising the steps of:

providing two or more animals of the same species;

determining in each animal the quantity of cells expressing an antigen that is targeted by MHC-DQ antibodies as MHC-DQB;

determining a statistically significant association between an animal's quantity of cells expressing an antigen that is targeted by MHC-DQ antibodies as MHC-DQB and robustness; and selecting for the animal in order to improve robustness based on the association.

Claim 22 (Original): A method for selecting for robustness among two or more animals, the method comprising the steps of:

providing two or more animals of the same species;

determining in each animal the quantity of cells expressing an antigen that is targeted by MHC-DQ antibodies as MHC-DQD;

determining a statistically significant association between an animal's quantity of cells expressing an antigen that is targeted by MHC-DQ antibodies as MHC-DQD; and selecting for the animal in order to improve robustness based on the association.

Claim 23 (Original): A method for selecting for robustness among two or more animals, the method comprising the steps of:

providing two or more animals of the same species;

determining in each animal the proliferation frequency of CD4 antigen-expressing cells;
determining a statistically significant association between an animal's proliferation frequency of
CD4 antigen-expressing cells and robustness; and
selecting for the animal in order to improve robustness based on the association.

Claim 24 (Original): The method of claim 17 wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta canadensis*.

Claim 25 (Original): The method of claim 18 wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta canadensis*.

Claim 26 (Original): The method of claim 19 wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta Canadensis*.

Claim 27 (Original): The method of claim 20 wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta Canadensis*.

Claim 28 (Original): The method of claim 21 wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta Canadensis*.

Claim 29 (Original): The method of claim 22 wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta Canadensis*.

Claim 30 (Original): The method of claim 23 wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta Canadensis*.

Claim 31 (Original): A method for selecting for robustness among two or more animals, the method comprising the steps of:
providing two or more animals of the same species;
obtaining a biological sample from the animals, wherein the sample comprises whole blood;
determining in each animal the quantity of CD16 antigen-expressing cells; and
selecting the animal with the lowest quantity of CD16 antigen-expressing cells, thereby selecting for robustness among two or more animals.

Claim 32 (Original): A method for selecting for robustness among two or more animals, the method comprising the steps of:
providing two or more animals of the same species;

obtaining a biological sample from the animals, wherein the sample comprises whole blood;
determining in each animal the quantity of CD16 and CD2 double-positive antigen-expressing
cells; and
selecting the animal with the lowest quantity of CD16 and CD2 double-positive antigen-
expressing cells, thereby selecting for robustness among two or more animals.

Claim 33 (Original): A method for selecting for robustness among two or more animals, the
method comprising the steps of:
providing two or more animals of the same species;
obtaining a biological sample from the animals, wherein the sample comprises whole blood;
determining in each animal the quantity of CD8 antigen-expressing cells; and
selecting the animal with the lowest quantity of CD8 antigen-expressing cells, thereby selecting
for robustness among two or more animals.

Claim 34 (Original): A method for selecting for robustness among two or more animals, the
method comprising the steps of:
providing two or more animals of the same species;
obtaining a biological sample from the animals, wherein the sample comprises whole blood;
determining in each animal the quantity of MHC-DQ antigen-expressing cells; and
selecting the animal with the highest quantity of MHC-DQ antigen-expressing cells, thereby
selecting for robustness among two or more animals.

Claim 35 (Original): A method for selecting for robustness among two or more animals, the method comprising the steps of:

- providing two or more animals of the same species;
- obtaining a biological sample from the animals, wherein the sample comprises whole blood;
- determining in each animal the quantity of cells expressing an antigen that is targeted by MHC-DQ antibodies as MHC-DQB; and
- selecting the animal with the highest quantity of cells expressing an antigen that is targeted by MHC-DQ antibodies as MHC-DQB, thereby selecting for robustness among two or more animals.

Claim 36 (Original): A method for selecting for robustness among two or more animals, the method comprising the steps of:

- providing two or more animals of the same species;
- obtaining a biological sample from the animals, wherein the sample comprises whole blood;
- determining in each animal the quantity of cells expressing an antigen that is targeted by MHC-DQ antibodies as MHC-DQD; and
- selecting the animal with the highest quantity of cells expressing an antigen that is targeted by MHC-DQ antibodies as MHC-DQD, thereby selecting for robustness among two or more animals.

Claim 37 (Original): A method for selecting for robustness among two or more animals, the method comprising the steps of:

- providing two or more animals of the same species;

obtaining a biological sample from the animals, wherein the sample comprises whole blood;
determining in each animal the proliferation frequency of CD4 antigen-expressing cells; and
selecting the animal with the lowest proliferation frequency of CD4 antigen-expressing cells,
thereby selecting for robustness among two or more animals.

Claim 38 (Original): The method of claim 31 wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta canadensis*.

Claim 39 (Original): The method of claim 32 wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta canadensis*.

Claim 40 (Original): The method of claim 33 wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta Canadensis*.

Claim 41 (Original): The method of claim 34 wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta Canadensis*.

Claim 42 (Original): The method of claim 35 wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta Canadensis*.

Claim 43 (Original): The method of claim 36 wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta Canadensis*.

Claim 44 (Original): The method of claim 37 wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta Canadensis*.

Claim 45 (Original): A method for selecting for robustness among two or more animals, the method comprising the steps of:

providing two or more animals of the same species;

obtaining a biological sample from the animals, wherein the sample comprises whole blood;

determining in each animal the quantity of CD16 antigen-expressing cells; determining a

statistically significant association between an animal's quantity of CD16 antigen-

expressing cells and robustness; and

selecting for the animal in order to improve robustness based on the association.

Claim 46 (Original): A method for selecting for robustness among two or more animals, the method comprising the steps of:

providing two or more animals of the same species;
obtaining a biological sample from the animals, wherein the sample comprises whole blood;
determining in each animal the quantity of CD16 and CD2 double-positive antigen-expressing cells;
determining a statistically significant association between an animal's quantity of CD16 and CD2 double-positive antigen-expressing cells and robustness; and
selecting for the animal in order to improve robustness based on the association.

Claim 47 (Original): A method for selecting for robustness among two or more animals, the method comprising the steps of:

providing two or more animals of the same species;
obtaining a biological sample from the animals, wherein the sample comprises whole blood;
determining in each animal the quantity of CD8 antigen-expressing cells;
determining a statistically significant association between an animal's quantity of CD8 antigen-expressing cells and robustness; and
selecting for the animal in order to improve robustness based on the association.

Claim 48 (Original): A method for selecting for robustness among two or more animals, the method comprising the steps of:

providing two or more animals of the same species;
obtaining a biological sample from the animals, wherein the sample comprises whole blood;
determining in each animal the quantity of MHC-DQ antigen-expressing cells;

determining a statistically significant association between an animal's quantity of MHC-DQ antigen-expressing cells and robustness; and
selecting for the animal in order to improve robustness based on the association.

Claim 49 (Original): A method for selecting for robustness among two or more animals, the method comprising the steps of:

providing two or more animals of the same species;

obtaining a biological sample from the animals, wherein the sample comprises whole blood;

determining in each animal the quantity of cells expressing an antigen that is targeted by MHC-DQ antibodies as MHC-DQB;

determining a statistically significant association between an animal's quantity of cells expressing an antigen that is targeted by MHC-DQ antibodies as MHC-DQB and robustness; and
selecting for the animal in order to improve robustness based on the association.

Claim 50 (Original): A method for selecting for robustness among two or more animals, the method comprising the steps of:

providing two or more animals of the same species;

obtaining a biological sample from the animals, wherein the sample comprises whole blood;

determining in each animal the quantity of cells expressing an antigen that is targeted by MHC-DQ antibodies as MHC-DQD;

determining a statistically significant association between an animal's quantity of cells expressing an antigen that is targeted by MHC-DQ antibodies as MHC-DQD; and
selecting for the animal in order to improve robustness based on the association.

Claim 51 (Original): A method for selecting for robustness among two or more animals, the method comprising the steps of:

providing two or more animals of the same species;

obtaining a biological sample from the animals, wherein the sample comprises whole blood;

determining in each animal the proliferation frequency of CD4 antigen-expressing cells;

determining a statistically significant association between an animal's proliferation frequency of CD4 antigen-expressing cells and robustness; and

selecting for the animal in order to improve robustness based on the association.

Claim 52 (Original): The method of claim 45 wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta canadensis*.

Claim 53 (Original): The method of claim 46 wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta canadensis*.

Claim 54 (Original): The method of claim 47 wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta Canadensis*.

Claim 55 (Original): The method of claim 48 wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta Canadensis*.

Claim 56 (Original): The method of claim 49 wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta Canadensis*.

Claim 57 (Original): The method of claim 50 wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta Canadensis*.

Claim 58 (Original): The method of claim 51 wherein the species is selected from the group consisting of *Bos taurus*, *Sus scrofa*, *Ovis aries*, *Bison bison*, *Babalus babalus*, *Gallus domesticus*, *Meleagrus gallopavo*, *Anas rubripes*, and *Branta canadensis*.